	Application No.	Applicant(s)
Notice of Allowability	10/715,239	WARLOCK, ARWEN
	Examiner	Art Unit	
	Kandasamy Thangavelu	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *June 8, 2007*.

2. ☒ The allowed claim(s) is/are *1-65*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☒ including changes required by the attached ~~Examiner's Amendment~~ / Comment or in the Office action of Paper No./Mail Date __—__ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material '

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☒ Other *Clean copy of Allowed Claims*.

DETAILED ACTION

Introduction

1.   This communication is in response to the Applicants' communication dated June 8, 2007. Claims 1, 20, 39, 42-50, 52-56, 58 and 61 were amended. Claims 1-66 of the application are pending.

Correction to the drawings

2.   The correction to the drawing for Figure 22 that was submitted on June 8, 2007 is not accepted, because it has incorrect application number, inventor name, title and docket number typed at the top. The Applicant is directed to submit a corrected Figure 22 with correct application number, inventor name, title and docket number typed at the top.

Examiner's Amendment

3.   Authorization for this examiner's amendment was given in a telephone conversation by Mr. Kevin Canning on July 18, 2007.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to the applicants, an amendment may be filed as provided by 37 CFR

1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the

payment of the issue fee.

4.   In the claims:

Replace claim 1 with:

1.   A computer implemented method of organizing a graphical model of an

engineered system, comprising:

identifying a component of the graphical model based on selected characteristics or a

pattern of similarities for conversion into a reference;

processing the component to identify the pattern of similarities with other components or

similarities of selected characteristics, and automatically converting the component into a

reference;

wherein converting the component into a reference comprises replacing a similar pattern

or a set of selected characteristics of a representation of the component by a reference to a

previous occurrence of that similar pattern or set of selected characteristics in a representation of

any component; and

storing the reference and contents of the representation of the component in a file in the

computer for coordinating a graphical modeling process.

Replace claims 10 and 18 with:

10.   The method of claim 1, wherein automatically converting the component into a

reference further comprises:

creating a new model;

copying into the new model a portion of the contents of a representation of the

component that relates to a repeated pattern or a repeated functionality; and

copying into the new model a configuration set associated with the component.

11.   The method of claim 10, further comprising setting attributes of input and output

ports of the component.

12.   The method of claim 10, wherein automatically converting the component into a

reference further comprises replacing the contents of the representation of the component that

were copied into the new model and the configuration set with a reference to the new model,

where the replacing forms a model reference.

13.   The method of claim 12, wherein the configuration set comprises model

peripheral information comprising at least one of numerical solver, start and stop times, code.

generation target and logging options.

14.   The method of claim 10, further comprising replacing the contents of

representations of other components having a pattern of similarities with the new model with

references to the new model, where the replacing forms model references.

15.   The method of claim 1, wherein automatically converting the component into a

reference comprises converting the pattern into a new subsystem within the graphical model.

16.   The method of claim 15, wherein automatically converting the component into a

reference further comprises copying the contents of representation of the subsystem into a

library, forming a library subsystem and leaving an original representation of the subsystem

within the graphical model.

17.   The method of claim 16, wherein automatically converting the component into a

reference further comprises replacing the original representation of the subsystem with a

reference to the library subsystem, where the replacing forms a library reference.

18.   The method of claim 17, further comprising replacing the contents of

representations of the other components having a pattern of similarities with the library

subsystem with references to the library subsystem.

Replace claim 20 with:

20.   A system for organizing a graphical model of an engineered system, the system

comprising:

a computer comprising a processor, a memory and a display device;

an identifier for identifying a component of the graphical model based on selected

characteristics or a pattern of similarities for conversion into a reference;

a converter for processing the component to identify the pattern of similarities with other

components or similarities of selected characteristics, and automatically converting the

component into a reference;

wherein converting the component into a reference comprises replacing a similar pattern

or a set of selected characteristics of a representation of the component by a reference to a

previous occurrence of that similar pattern or set of selected characteristics in a representation of

any component; and

a storage facility for storing the reference and contents of the representation of the

component in a file in the computer for coordinating a graphical modeling process.

Replace clam 24 with:

24.   The system of claim 20, wherein the identifier utilizes a checksum to identify a

selected pattern and selecting the component that matches the selected pattern.

Replace claims 28-37 with:

28.   The system of claim 20, wherein the identifier solicits user interaction to

participate in a selection of the component based on at least one of pattern matching, re-usability,

and polymorphism characteristics.

29.   The system of claim 20, wherein the converter

creates a new model;

copies into the new model a portion of the contents of a representation of the component

that relates to a repeated pattern or a repeated functionality; and

copies into the new model a configuration set associated with the component.

30.   The system of claim 29, the converter sets attributes of input and output ports of

the component.

31.   The system of claim 29, the converter replaces the contents of the representation

of the component that were copied into the new model and the configuration set with a reference

to the new model, where the replacing forms a model reference.

32.   The system of claim 31, wherein the configuration set comprises model peripheral

information comprising at least one of numerical solver, start and stop times, code generation

target and logging options.

33.   The system of claim 29, wherein the converter replaces the contents of

representations of other components having a pattern of similarities with the new model with

references to the new model, where the replacing forms model references.

34.   The system of claim 20, wherein the converter converts the pattern into a new

subsystem within the graphical model.

35.   The system of claim 34, wherein the converter copies the contents of

representation of the subsystem into a library, forming a library subsystem and leaving an

original representation of the subsystem within the graphical model.

36.   The system of claim 35, wherein the converter replaces the original representation

of the subsystem with a reference to the library subsystem, where the replacing forms a library

reference.

37.   The system of claim 36, wherein the converter replaces the contents of

representations of the other components having a pattern of similarities with the library

subsystem with references to the library subsystem.

Replace claim 39 with:

39.   A computer readable storage medium holding computer executable instructions

which when executed on a computer perform a method of organizing a graphical model of an

engineered system, the medium comprising:

instructions for identifying a component of the graphical model based on selected

characteristics or a pattern of similarities for conversion into a reference;

instructions for processing the component to identify the pattern of similarities with other

components or similarities of selected characteristics, and automatically converting the

component into a reference;

wherein converting the component into a reference comprises replacing a similar pattern

or a set of selected characteristics of a representation of the component by a reference to a

previous occurrence of that similar pattern or set of selected characteristics in a representation of

any component; and

instructions for storing the reference and contents of the representation of the component

in a file in the computer for coordinating a graphical modeling process.

Replace claim 43 with:

43.   The medium of claim 39, wherein instructions for identifying the component

comprises instructions for utilizing a checksum to identify a selected pattern and selecting the

component that matches the selected pattern.

Replace claims 47-56 with:

47.   The medium of claim 39, wherein instructions for identifying the component

comprises instructions for soliciting user interaction to participate in a selection of the

component based on at least one of pattern matching, re-usability, and polymorphism

characteristics.

48.   The medium of claim 39, wherein instructions for automatically converting the

component into a reference further comprises:

instructions for creating a new model;

instructions for copying into the new model a portion of the contents of a representation

of the component that relates to a repeated pattern or a repeated functionality; and

instructions for copying into the new model a configuration set associated with the

component.

49.   The medium of claim 48, further comprising instructions for setting attributes of

input and output ports of the component.

50.   The medium of claim 48, wherein instructions for automatically converting the

component into a reference further comprises instructions for replacing the contents of the

representation of the component that were copied into the new model and the configuration set

with a reference to the new model, where the replacing forms a model reference.

51.   The medium of claim 50, wherein the configuration set comprises model

peripheral information comprising at least one of numerical solver, start and stop times, code

generation target and logging options..

52.   The medium of claim 48, further comprising instructions for replacing the

contents of representations of other components having a pattern of similarities with the new

model with references to the new model, where the replacing forms model references.

53.   The medium of claim 39, wherein instructions for automatically converting the

component into a reference comprises instructions for converting the pattern into a new

subsystem within the graphical model.

54.   The medium of claim 53, wherein instructions for automatically converting the

component into a reference further comprises instructions for copying the contents of

representation of the subsystem into a library, forming a library subsystem and leaving an

original representation of the subsystem within the graphical model.

55.   The medium of claim 54, wherein instructions for automatically converting the

component into a reference further comprises instructions for replacing the original

representation of the subsystem with a reference to the library subsystem, where the replacing

forms a library reference.

56.   The medium of claim 55, further comprising instructions for replacing the

contents of representations of the other components having a pattern of similarities with the

library subsystem with references to the library subsystem.

Replace claims 58-63 with:

58.   A computer implemented method of simplifying a graphical model of an

engineered system, comprising:

identifying repeating occurrences of a pattern of similarities among a plurality of

components;

creating a new model based on the pattern of similarities;

copying into the new model a portion of the contents of a representation of a component

that relates to a repeated pattern or a repeated functionality and

copying into the new model a configuration set associated with the component;

replacing each of the repeating occurrences of the pattern of similarities in components

with a reference to the new model; and

storing the references and the contents of representations of the components in a file in

the computer for coordinating a graphical modeling process.

59.   The method of claim 58, wherein each of the components comprises at least one

of a system, a sub-system, a portion of a system, and a portion of a sub-system disposed within

the graphical model.

60.   The method of claim 58, wherein identifying repeating occurrences of the pattern

comprises heuristically locating a re-usable pattern amongst the plurality of components and

selecting one of the components to represent the re-usable pattern.

61.   The method of claim 58, wherein identifying the repeating occurrences of the

pattern comprises utilizing a checksum to identify selected patterns amongst the plurality of

components and selecting an individual of the components that matches the selected patterns.

62.   The method of claim 58, wherein identifying the repeating occurrences of the

pattern comprises heuristically locating a specific type of component amongst the plurality of

components and selecting one of the components that matches the specific type.

63.   The method of claim 58, wherein identifying the repeating occurrences of the

pattern comprises locating a selected acyclic graph of blocks amongst the plurality of

components and selecting one of the components that contains the selected acyclic graph of

blocks.

Replace claim 65 with:

65.   The method of claim 58, wherein identifying the repeating occurrences of the

pattern comprises soliciting user interaction to participate in a selection of the component based

on at least one of pattern matching, re-usability, and polymorphism characteristics.

Cancel claim 66.

A clean copy of allowed claims is attached.

Reasons for Allowance

5.   Claims 1-65 of the application are allowed over prior art of record.

6.   The following is an Examiner's statement of reasons for the indication of allowable

subject matter:

The closest prior art of record shows:

(1) graphical tools allow the domain expert to create, monitor and change the software

system by visualized graphically a software system's configuration parameters, execution logic

and data; encapsulating software functions into connected components to build an application;

the components are of the same component type and are generated by specified method; a

component type object is configured to store a slot definition; identified property slot definitions

are stored in that component type object; one or more components are generated; a link is used to

designate execution flow in component based software; the component model allows one to

define slots in components and add new slots at runtime; in the component model, component

types are stored in the computer's memory; the storage of the component type is done by using a

component-type object; the component-type object is a physical representation of a component-

type; a reference from a component to the component-type object is used to represent that a

component belongs to a component type; a framework creates a component instance from an

existing component generic class; the framework identifies the component type object of the

component and creates a reference from the component instance to the component-type object;

this reference, usually a pointer designates an instance-type relationship; a user creates a flow of

execution by linking various slots of various components; dynamic links allow the execution

flow of a component system to be changed while the software is running (**Frank et al.,** U.S.

Patent Application 2003/0159129);

(2) a method and an apparatus for managing and distributing design and manufacturing

information in a factory to facilitate production of components; the system uses electronically

stored job sheets that can be accessed from any location in the factory; the system enhances

efficiency and organization of stored expert knowledge; it provides for logically storing both

design and manufacturing information for each customer's order; the job data is stored at a

central database in a logical fashion and can be searched and retrieved from any location

throughout the factory; the search criteria may include basic features and attributes of the sheet

metal component to be manufactured so that previous job information relating to an identical or

similar part can be utilized to reduce overall manufacturing time of future jobs; the system

allows developing tooling for the part using a graphical user interface (**Sakai**, U.S. Patent

6,219,586); and

(3) a diagnostic system for an avionics system that acquires a description of the system

from design tools; the system integrates a graphical user interface with an inference system

which acts as a diagnostic tool; the system uses a model representative of the avionics system;

using this model, an engineer may perform system level simulation to study the operation of the

entire avionics system or selected sub-system; the GUI allows to import data by either schematic

or data capture techniques; the system creates a casual network model based on behavioral

characteristics of various subsystems of the avionics system; from the casual network model, the

diagnostic system builds a directed acyclic graph model of the system; the diagnostic

information is used to display a representation of the avionics system and diagnostic inference

identifying the faulty LRU in the event of a fault; the graphical user interface allows visually

identifying failure sources in the avionics system during simulation (**Provan et al.**, U.S. Patent

6,208,955).

None of these references taken either alone or in combination with the prior art of record

discloses a computer implemented method of organizing a graphical model of an engineered

system, specifically including:

(Claim 1) "identifying a component of the graphical model based on selected

characteristics or a pattern of similarities for conversion into a reference;

processing the component to identify the pattern of similarities with other components or

similarities of selected characteristics, and automatically converting the component into a

reference;

wherein converting the component into a reference comprises replacing a similar pattern

or a set of selected characteristics of a representation of the component by a reference to a

previous occurrence of that similar pattern or set of selected characteristics in a representation of

any component".

None of these references taken either alone or in combination with the prior art of record

discloses a system for organizing a graphical model of an engineered system, specifically

including:

(Claim 20) "an identifier for identifying a component of the graphical model based on

selected characteristics or a pattern of similarities for conversion into a reference;

a converter for processing the component to identify the pattern of similarities with other

components or similarities of selected characteristics, and automatically converting the

component into a reference;

wherein converting the component into a reference comprises replacing a similar pattern

or a set of selected characteristics of a representation of the component by a reference to a

previous occurrence of that similar pattern or set of selected characteristics in a representation of

any component".

None of these references taken either alone or in combination with the prior art of record

discloses a computer readable storage medium holding computer executable instructions which

when executed on a computer perform a method of organizing a graphical model of an

engineered system, specifically including:

(Claim 39) "instructions for identifying a component of the graphical model based on

selected characteristics or a pattern of similarities for conversion into a reference;

instructions for processing the component to identify the pattern of similarities with other

components or similarities of selected characteristics, and automatically converting the

component into a reference;

wherein converting the component into a reference comprises replacing a similar pattern

or a set of selected characteristics of a representation of the component by a reference to a

previous occurrence of that similar pattern or set of selected characteristics in a representation of

any component".

None of these references taken either alone or in combination with the prior art of record

discloses a computer implemented method of simplifying a graphical model of an engineered

system, specifically including:

(Claim 58) "identifying repeating occurrences of a pattern of similarities among a

plurality of components;

creating a new model based on the pattern of similarities;

copying into the new model a portion of the contents of a representation of a component

that relates to a repeated pattern or a repeated functionality and

copying into the new model a configuration set associated with the component;

replacing each of the repeating occurrences of the pattern of similarities in components

with a reference to the new model".

7.   Any comments considered necessary by applicant must be submitted no later than the

payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for

Allowance."

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is

571-272-3717. The examiner can normally be reached on Monday through Friday from

8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

K. Thangavelu
Art Unit 2123
July 18, 2007